

# Pinellas Environmental Restoration Project

## Northeast Site

## Non-Aqueous Phase Liquids

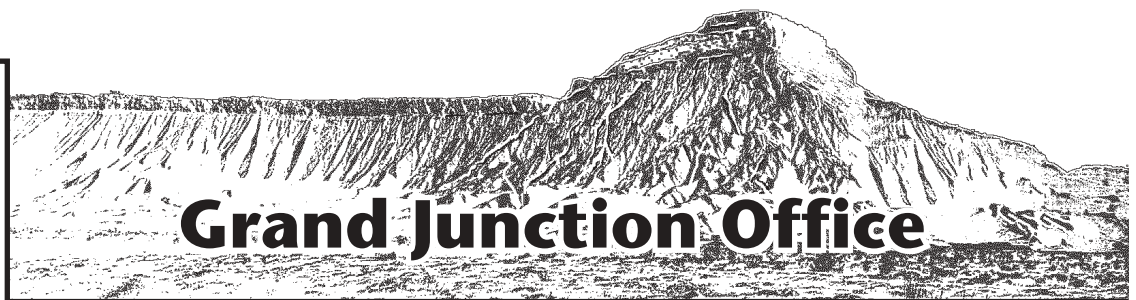
## Interim Measures Progress Report

## April Through June 2003

July 2003



U.S. Department  
of Energy



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Northeast Site Non-Aqueous Phase Liquids  
Interim Measures Progress Report**

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Prepared by  
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## Contents

Acronyms and Abbreviations .....	iii
1.0 Introduction .....	1
2.0 Summary of Activities .....	1
3.0 Deviations.....	2
4.0 Problems.....	2
5.0 Upcoming Activities .....	2

## Figures

Figure 1. Soil and Ground Water Sampling Locations.....	3
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## Tables

Table 1. Northeast Site – Area A NAPL Remediation Confirmatory Sample Results for Soil .....	4
Table 2. Northeast Site Area A NAPL Remediation Confirmatory Ground Water Sample Results.....	7

## Acronyms and Abbreviations

cis-1,2-DCE	cis-1,2-dichloroethene
fb	feet below surface
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
NAPL	non-aqueous phase liquid
TCE	trichloroethene

## 1.0 Introduction

This report is the fourth quarterly report for the in-situ thermal remediation at the Northeast Site. The previous reports covered the periods from May 2002 through September 2002, October 2002 through December 2002, and January 2003 through March 2003. They provided background information for the site, a description of the remediation process, an overview of construction activities, and a description of operation activities for the Area A non-aqueous phase liquid (NAPL) remediation system.

This report describes the NAPL remediation activities at Area A that occurred from April 2003 through June 2003. Activities during this period included demobilization of the well field and confirmatory sampling.

## 2.0 Summary of Activities

Active heating of all areas ceased on February 17, 2003, and active cooling of the subsurface (extraction of vapor and ground water) stopped on March 24, 2003. At this time, the subsurface had cooled sufficiently to allow confirmatory sampling to safely proceed.

The initial confirmatory sampling event that started on March 24, 2003, was completed by April 17. The initial sampling took soil samples from the subsurface at 20 different locations and ground water samples from 16 new wells and 8 perimeter wells. Four of the soil and eight of the ground water sampling locations were located outside the remediation area. These samples were used to determine whether or not contamination had been spread beyond the remediation area. The soil and ground water samples within the remediation area are being used to determine whether or not cleanup goals were met. The locations of the soil and ground water confirmatory samples are shown on [Figure 1](#).

The 12-week confirmatory sampling event took place from May 13 to May 22, 2003. Ground water samples were collected from the same initial 24 locations on May 13 and 14, 2003. Soil samples were collected from the Hawthorn at 20 locations on May 21 and 22, 2003. No other soil samples were collected during the 12-week sampling event. Soil samples from the Hawthorn were delayed until the 12-week event because the well field piping needed to be removed from the vapor cap before the samples could be obtained. Removal of the above grade well field piping allowed a sonic drilling rig, which is required to obtain samples from the Hawthorn, to maneuver on the vapor cap. The soil sample results are included in [Table 1](#). Ground water sample results from the initial and 12-week confirmatory sampling are included in [Table 2](#).

As shown on Tables 1 and 2, the results are significantly below the cleanup levels and, in almost all cases for ground water samples, below maximum contaminant levels. Another round of confirmatory ground water samples will be collected in mid July 2003 for the 24-week confirmatory sampling event. In all, three rounds of ground water samples will be taken to determine if there is a “rebound” effect, i.e., an increase, in contaminant concentrations. The results of the 12-week confirmatory sampling rounds do not show a rebound from the initial sampling results. Figure 1 shows the location of the samples. In addition, the sampling results from samples taken outside the remediation area show that contamination was not spread. Results from all the confirmatory sampling events will be included in the Final Report and presented in the next Quarterly Report.

At the completion of the operational phase, i.e., the completion of active cooling, the NAPL and NAPL-water mixture was removed from the separation tank and placed in drums. The material was sent to an off-site facility on May 2, 2003, for disposal as hazardous waste. Preliminary estimates of the mass removed ranged between 3,000 and 9,000 pounds of contaminants. The final estimate will consider all the analytical data from the vapor extracted, the water extracted and discharged, the carbon used for treatment, and the NAPL waste collected. These data will be presented in the Final Report and in the next Quarterly Report.

Demobilization activities completed during this period were removal of the piping from the vapor cap. This activity was completed in mid April 2003. The completion of demobilization activities will occur in late July and August 2003.

### **3.0 Deviations**

There were no deviations from the general concept of the remediation.

### **4.0 Problems**

There were minor problems with the materials used for the confirmatory sampling. Based on information gathered from other thermal remediation projects, acetate sleeves were initially used for soil sampling that used direct push technology. Because of the high subsurface temperatures, the acetate sleeves were not usable and stainless steel sleeves were required. In addition, stainless steel screens and CPVC casing were needed for the confirmatory ground water wells.

### **5.0 Upcoming Activities**

The final confirmatory sampling event, the 24-week event, will occur in late July 2003. This sampling event will only involve the collection of ground water samples from the 16 locations inside the remediation and 8 locations outside the remediation area.

Demobilization activities will resume in late July 2003 after the 24-week confirmatory sampling event is complete. Demobilization activities will involve removal and disposal of the vapor cap and treatment pad, removal of subcontractor equipment from the site, and removal of underground utilities installed for the remediation.

The Final Report is the last activity for Area A. Results from the sampling conducted during operations, confirmatory sampling, and a summary of the remediation activities will be included in the Final Report, which will be completed by the end of September 2003.

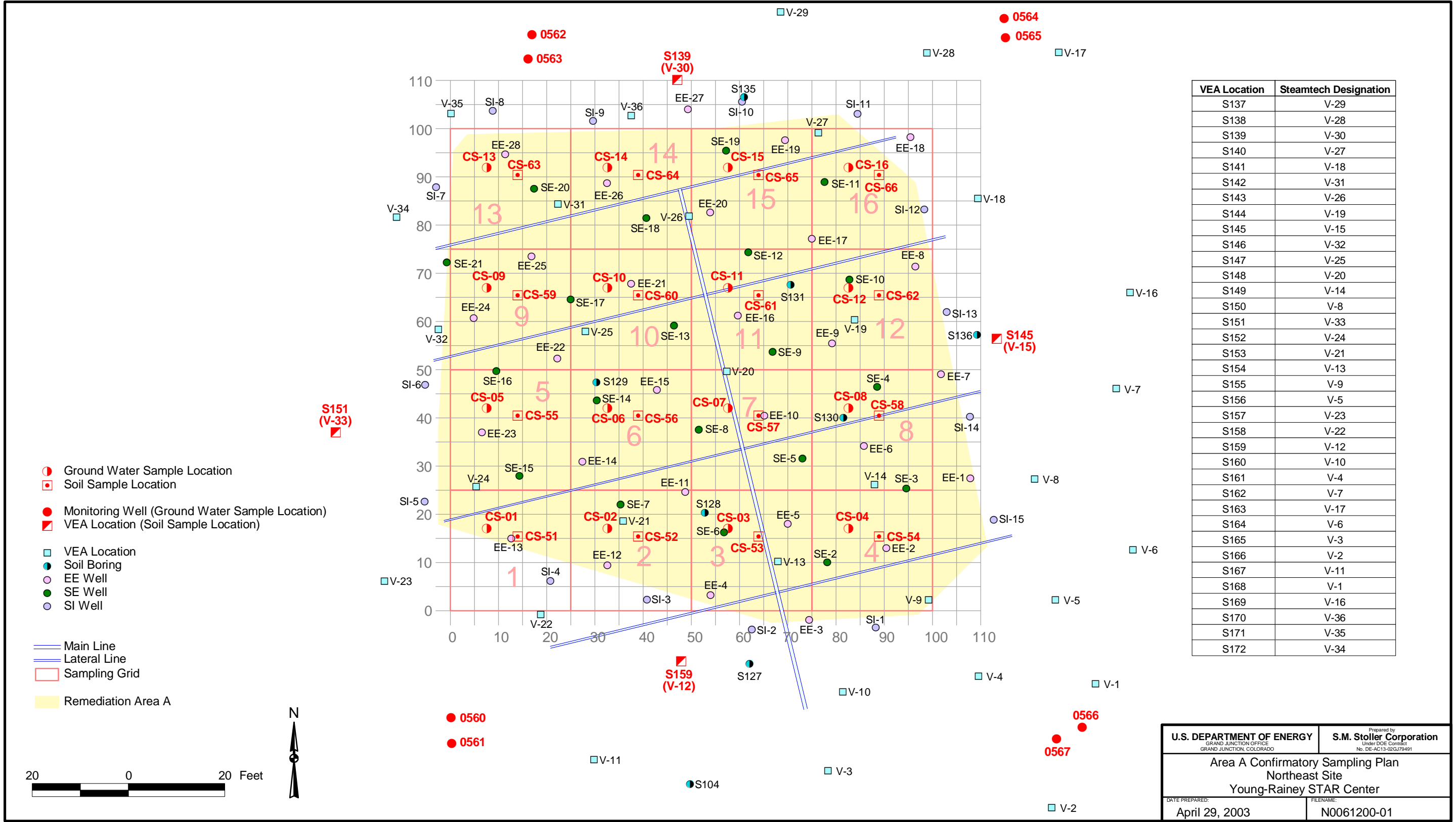


Table 1. Northeast Site – Area A NAPL Remediation Confirmatory Sample Results for Soil

Location	Date	Sample Depth (fbs)	cis-1,2-DCE (mg/kg)	Methylene Chloride (mg/kg)	Toluene (mg/kg)	TCE (mg/kg)	Florida Petroleum Range Organics (mg/kg)
<b>NAPL Remediation Goals</b>			<b>71,000</b>	<b>227,000</b>	<b>15,000</b>	<b>20,400</b>	<b>2,500,000</b>
<b>Samples Located Inside Remediation Area A</b>							
PIN15-CS-51	04/10/03	6.8	ND	ND	13	ND	ND
		14.8	ND	ND	14	ND	ND
		22.8	ND	ND	15	ND	ND
	05/21/03	33.0	ND	ND	ND	ND	ND
		35.0	ND	5.8 J	ND	ND	ND
PIN15-CS-52	04/10/03	1.1	ND	ND	12	ND	46,000
		9.1	ND	ND	12	ND	ND
		17.1	ND	ND	11	ND	ND
		25.1	ND	ND	220	ND	ND
	05/21/03	33.1	ND	4.6 J	ND	ND	ND
PIN15-CS-53	04/10/03	0.3	ND	ND	ND	ND	81,000
		8.3	ND	ND	11	ND	ND
		16.3	ND	ND	11	ND	5,600 J
		24.3	ND	ND	ND	ND	ND
	05/21/03	32.3	ND	5.0 J	ND	ND	ND
PIN15-CS-54	04/09/03	3.2	ND	ND	18	7.7	120,000
		11.2	ND	ND	11	ND	54,000
		19.2	ND	ND	18	ND	16,000
		27.2	ND	ND	ND	ND	64,000
	05/21/03	35.0	ND	ND	ND	ND	ND
PIN15-CS-55	03/27/03	5.9	ND	ND	14	ND	ND
		13.9	ND	ND	12	ND	ND
		21.9	ND	3.4 J	15	ND	ND
		29.9	ND	ND	12	ND	ND
	05/22/03	35.0	ND	ND	ND	ND	ND
PIN15-CS-56	04/10/03	3.6	ND	ND	18	ND	310,000
		11.6	ND	ND	10	ND	ND
		19.6	ND	ND	13	ND	ND
	05/22/03	27.6	ND	ND	ND	ND	ND
		35.0	ND	ND	ND	ND	ND
PIN15-CS-57	04/09/03	3.7	ND	ND	18	20	330,000
		11.7	ND	ND	16	ND	ND
		19.7	ND	ND	16	ND	ND
		27.7	ND	ND	ND	ND	ND
	05/21/03	35.0	ND	ND	ND	ND	ND



Table 1 (continued). Northeast Site – Area A NAPL Remediation Confirmatory Sample Results for Soil

Location	Date	Sample Depth (fbs)	cis-1,2-DCE (mg/kg)	Methylene Chloride (mg/kg)	Toluene (mg/kg)	TCE (mg/kg)	Florida Petroleum Range Organics (mg/kg)
<b>NAPL Remediation Goals</b>			<b>71,000</b>	<b>227,000</b>	<b>15,000</b>	<b>20,400</b>	<b>2,500,000</b>
PIN15-CS-58	04/09/03	5.3	ND	ND	21	9.1	110,000
		13.3	ND	ND	10	ND	5,100 J
		21.3	ND	ND	12	ND	ND
		29.3	ND	ND	12	ND	ND
	05/22/03	35.0	ND	ND	ND	ND	ND
PIN15-CS-59	03/27/03	3	5.8	ND	14	ND	36,000
		11	ND	ND	12	ND	ND
		19	ND	3.7 J	ND	ND	ND
		27	ND	ND	16	ND	ND
	05/22/03	35.0	ND	ND	ND	ND	ND
PIN15-CS-60	04/10/03	1.8	ND	ND	16	3 J	86,000
		9.8	ND	ND	16	ND	ND
		17.8	ND	ND	14	ND	ND
		25.8	ND	ND	14	ND	ND
	05/22/03	33.8	ND	ND	ND	ND	ND
PIN15-CS-61	04/08/03	2.9	ND	ND	43	7.4	47,000
		10.9	ND	ND	ND	ND	ND
		18.9	ND	ND	14	ND	ND
		26.9	ND	ND	ND	ND	ND
	05/21/03	34.9	ND	5.9 J	ND	ND	ND
PIN15-CS-62	04/09/03	6.7	65	ND	65	5.7	ND
		14.7	ND	ND	ND	ND	16,000
		22.7	ND	ND	16	ND	57,000
	05/22/03	30.7	ND	7.9 J	ND	ND	ND
		35.0	ND	ND	ND	ND	7.6
PIN15-CS-63	03/24/03	6	14	ND	11	ND	ND
		14	ND	ND	11	ND	ND
		30	ND	ND	ND	ND	ND
	03/27/03	22	ND	ND	ND	ND	ND
	05/22/03	35.0	ND	5.6 J	ND	ND	ND
PIN15-CS-64	04/10/03	0.9	ND	ND	16	ND	550,000
		8.9	47	ND	220	110	ND
		16.9	ND	ND	14	ND	ND
		24.9	ND	ND	13	ND	ND
	05/22/03	32.9	ND	ND	ND	ND	ND

Table 1 (continued). Northeast Site – Area A NAPL Remediation Confirmatory Sample Results for Soil

Location	Date	Sample Depth (fbs)	cis-1,2-DCE (mg/kg)	Methylene Chloride (mg/kg)	Toluene (mg/kg)	TCE (mg/kg)	Florida Petroleum Range Organics (mg/kg)
<b>NAPL Remediation Goals</b>			<b>71,000</b>	<b>227,000</b>	<b>15,000</b>	<b>20,400</b>	<b>2,500,000</b>
PIN15-CS-65	04/08/03	5	120	ND	83	ND	110,000
		13	ND	3.2 J	12	ND	ND
		21	ND	ND	14	ND	ND
		29	ND	ND	ND	ND	ND
	05/21/03	35.0	ND	8.2 J	ND	ND	ND
PIN15-CS-66	04/10/03	0.4	9.5	ND	12	25	95,000
		8.4	90	3 J	420	74	ND
		16.4	ND	ND	15	ND	ND
		24.4	ND	ND	12	ND	ND
	05/22/03	32.4	ND	4.0 J	ND	ND	8,800 J
<b>Samples Located Outside the Remediation Area A</b>							
PIN15-CS-67	03/24/03	5.1	ND	ND	14	ND	ND
		13.1	ND	ND	11	ND	ND
		21.1	ND	ND	ND	ND	ND
		29.1	ND	ND	17	ND	ND
	05/20/03	35.0	ND	6.6 J	ND	ND	ND
PIN15-CS-68	03/25/03	0.6	ND	ND	15	ND	460,000
		8.6	ND	ND	11	ND	21,000
		16.6	ND	ND	13	ND	9,200 J
		24.6	10	6.2 J	62	ND	15,000
	05/20/03	32.6	ND	4.5 J	ND	ND	ND
PIN15-CS-69	03/25/03	3.7	ND	3 J	11	ND	130,000
		11.7	240	ND	ND	ND	26,000
		19.7	ND	ND	ND	ND	5,300 J
		27.7	ND	ND	12	ND	ND
	05/20/03	35.0	ND	ND	ND	ND	ND
PIN15-CS-70	03/25/03	6.1	ND	ND	ND	ND	6,800 J
		14.1	ND	ND	11	130	ND
		22.1	ND	ND	ND	ND	ND
		30.1	ND	ND	12	ND	ND
	05/20/03	35.0	ND	ND	ND	ND	ND

**Notes:**

1. ND = Not Detected
2. J = Estimated value above the instrument detection limit but below the reporting limit.
3. B = Analyte detected in the laboratory method blank

Table 2. Northeast Site Area A NAPL Remediation Confirmatory Ground Water Sample Results

Location	cis-1,2-DCE µg/L		Methylene Chloride µg/L		Toluene µg/L		TCE µg/L		Florida Petroleum Range Organics µg/L	
<b>NAPL Remediation Goals</b>	<b>50,000</b>		<b>20,000</b>		<b>5,500</b>		<b>11,000</b>		<b>50,000</b>	
<b>Ground Water MCLs:</b>	<b>70</b>		<b>5</b>		<b>1,000</b>		<b>3</b>		<b>5,000*</b>	
<b>Date</b>	<b>Apr 16-17</b>	<b>May 13-14</b>	<b>Apr 16-17</b>	<b>May 13-14</b>	<b>Apr 16-17</b>	<b>May 13-14</b>	<b>Apr 16-17</b>	<b>May 13-14</b>	<b>Apr 16-17</b>	<b>May 13-14</b>
<b>Samples Inside Remediation Area A</b>										
PIN15-CS-01	ND	3.3	ND	0.40 JB	ND	ND	ND	0.58 J	ND	ND
PIN15-CS-02	ND	0.74 J	ND	0.49 JB	0.24 J	0.38 J	ND	0.13 J	ND	320
PIN15-CS-03	ND	ND	ND	1.2 JB	1.3	ND	ND	ND	340	510
PIN15-CS-04	0.3 J	0.45 J	ND	1.3 JB	4.1	2.5	ND	ND	120 J	970
PIN15-CS-05	23	9.9	13	3.8 JB	1.5	0.83 J	0.63 J	0.35 J	3,200	6,800
PIN15-CS-06	0.5 J	36	4.2 J	150 B	0.59 J	ND	ND	2.7	120 J	140 J
PIN15-CS-07	ND	.22 J	0.48 J	1.2 JB	1.4	7.0	ND	ND	1,000	6,700
PIN15-CS-08	2.4	1.8	ND	1.8 JB	17	8.3	ND	2.0	210 J	580
PIN15-CS-09	ND	ND	0.52 J	1.4 JB	1.4	1.8	ND	ND	400	740
PIN15-CS-10	ND	ND	0.82 J	ND	1.4	1.2	ND	ND	180 J	340
PIN15-CS-11	ND	ND	ND	ND	0.49 J	1.5	ND	ND	110 J	270 J
PIN15-CS-12	0.43 J	0.45 J	0.74 J	1.1 JB	4.5	2.5	0.28 J	0.42 J	490	980
PIN15-CS-13	ND	ND	0.62 J	1.7 JB	1.3	0.85 J	ND	ND	240 J	580
PIN15-CS-14	ND	0.30 J	0.78 J	1.7 JB	1	ND	ND	0.11 J	120 J	400
PIN15-CS-15	ND	ND	0.68 J	ND	4.7	ND	ND	ND	1,000	2,400
PIN15-CS-16	1.3	1.2	0.8 J	0.75 JB	4.5	38	ND	29	ND	190 J
<b>Samples Outside Remediation Area A</b>										
PIN15-0560	ND	ND	ND	0.84 JB	ND	ND	ND	ND	ND	ND
PIN15-0561	ND	ND	ND	0.55 JB	ND	ND	ND	ND	ND	ND
PIN15-0562	ND	ND	ND	0.37 JB	ND	ND	ND	ND	ND	ND
PIN15-0563	1.5	1.6	ND	0.41 JB	0.3 J	0.54 J	1.4	0.92 J	160 J	ND
PIN15-0564	2.4	0.56 J	ND	0.59 JB	ND	ND	0.12 J	0.20 J	ND	ND
PIN15-0565	ND	ND	ND	0.85 JB	ND	ND	ND	ND	ND	ND
PIN15-0566	ND	0.35 J	ND	0.60 JB	1.1	1.4	ND	ND	ND	ND
PIN15-0567	2.3	1.4	ND	ND	ND	ND	ND	ND	ND	ND

**Notes:** 1. ND = Not Detected.

2. J = Estimated value above the instrument detection limit but below the reporting limit.

3. B = Analyte detected in the laboratory method blank.

4. \*Florida Total Petroleum Hydrocarbons is not a COPC for the Northeast Site, but if it was, the MCL would be 5,000 µg/L.